

IN THE ABSTRACT OF THE DISCLOSURE

(Amended) The invention relates to an entangled-photon apparatus capable of measuring particular characteristics of an optical element, device or channel and further capable of correcting for the effects of these characteristics in an optical communications signal propagating through the same optical element. The apparatus includes a source of entangled photons (twinons), which are injected into the device under test along with the communications signal, and a two branch quantum interference device (QID) for determining the state of entanglement of the photons after they pass through the device. The QID includes a variable delay element that is incremented to equalize the twinon correlation in the two branches of the QID. A second variable delay element, slaved to the first, applies the corresponding compensation to the communications signal.